AAAAI Ask the Expert
9/7/11

Possible metabisulfite allergy in a patient who may need epinephrine

Q: Is it ok to give Epinephrine to a patient with history of anaphylaxis to epinephrine/sodium metabisulfite she received at the dentist's office? The dentist told her to let her docs know she is 'allergic to epinephrine' but that the reaction was more likely due to the preservative (sodium metabisulfite). I have found only one company that produces sulfite free, preservative free epi however they ran out and no future release date. If this patient has a systemic reaction to SPT, is it ok to give regular epi, even though it has the sodium metabisulfite? Thanks.

A: Thank you for your recent inquiry.

There may be a metabisulfite-free epinephrine preparation available. It was available at one time for ophthalmological use, but there has been a shortage of this compound, and you may no longer be able to get it. However, if you are concerned about the metabisulfites, that might be an option for you.
For your interest, I have copied an abstract below that deals with this issue, and a reference to an article citing the shortage.

However, in my experience, the history of metabisulfite allergy is really, relative to this situation, a “straw man.” It is highly doubtful that the amount of metabisulfite contained as preservative in epinephrine injections will be sufficient to produce an adverse response even in a patient who has a history of a possible previous adverse reaction to metabisulfite exposure.

We have seen several patients throughout the years who gave such a history who have actually been able to take epinephrine preserved in metabisulfite without problem.

I can only share with you the way we normally approach this problem, and state that in the past, in our hands, this approach has been without problem and has allowed patients to take epinephrine preserved in metabisulfite.

We approach it as we would a standard provocative challenge test (e.g., similar to one that you might do for a local anesthetic, minus the skin test).

Of course, you cannot skin test to epinephrine and therefore we simply begin with challenge doses.

The usual procedure is to take the standard 1:1,000 epinephrine injection and make serial dilutions to a 1:100,000 and administer graded doses over a two to perhaps three day period. We usually divide the dosing into two days because of possible side effects due to the pharmacologic activity of epinephrine (but not because we are truly worried about administering the drug preserved in metabisulfite). We start with 0.1 cc of the 1:100,000, and double the dosage with each injection administered over a 30 minute period. Thus, the patient would receive, if they do not have side effects from the epinephrine per se, first 0.1 followed by 0.2, then by 0.4, and finally 0.8 cc of the 1:100,000 preparation.

If they are tolerating this, we then proceed to the 1:10,000 preparation and repeat the same process. If they have trouble with the epinephrine (jitteriness, tremor, fast heartbeat, et cetera), we do the 1:10,000 on another day. If not, we go as far as we can with the 1:10,000.

Finally, with a successful challenge to the 1:10,000 preparation, and sometimes on a separate day, we bring them in for an epinephrine injection using the standard 1:1,000 concentration.

We usually give in-office 0.1 cc of the 1:1,000. If they have no problem with this dose (other than the side effects from epinephrine), we deem it safe to take the 0.3 cc standard dose if they should need it.

The only trouble that we have ever had is with, as noted, side effects from the epinephrine itself. And usually we can proceed through these if the patient is warned ahead of time that such side effects are not an allergic reaction, but are due to the pharmacologic effect of the drug and should be expected.

Thank you again for your inquiry and we hope this response is helpful to you.

Am J Ophthalmol. 1990 Jul 15;110(1):77-82.
A bisulfite-free intraocular epinephrine solution.
Slack JW, Edelhauser HF, Helenek MJ.
Source
Department of Ophthalmology, Medical College of Wisconsin, Milwaukee.
Abstract
We evaluated a preservative-free, sulfite-free epinephrine solution for potential corneal toxicity, which has been described for sulfite-containing epinephrine solutions. The preservative-free, sulfite-free epinephrine solution did not exhibit endothelial toxicity in three-hour paired human corneal endothelial perfusion at two and four times the concentration of the 1:1,000,000 dilution currently recommended for anterior chamber intraocular irrigating solutions. When epinephrine at a dilution of 1:1,000 was injected directly into the anterior chamber of New Zealand white rabbits, there was markedly less corneal edema induced than there was in previous studies with sulfite-containing solutions of comparably low pH but higher buffer capacities. Although potential toxicity exists for any irrigating solution with a pH outside of the 6.5 to 8.5 pH range, the endothelial toxicity of this solution has been reduced by its low buffer capacity, lack of preservatives, and lack of sulfite, offering an extra margin of safety for intraocular use

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Volume 37, Issue 3 , Page 611, March 2011Shortage of bisulfite-free preservative-free epinephrine for intracameral useWilliam G. Myers, MD, Henry F. Edelhauser, PhD

Sincerely,
Phil Lieberman, M.D.